

The Files: Contract No: 672, T.O. 6

21 August 1962

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Trip Report - Development of HI-5 Hand Crank Generator

1. Project Description:

The HI-5 is to be a hand crank generator which will have an output of approximately 40 watts at a constant current of 2.5 amperes into a self-contained 12 volt nickel-cadmium battery. The two generators being fabricated under this contract will not be in a final package in that the battery pack and control electronics will be packaged apart from the basic generator. These two units will be used for feasibility testing to determine the practicability (both operationally and technically) of such a device.

2. Contractual Information:

- a. Initial Cost: \$4,992.00
- b. Initiation Date: 15 June 1962
- c. Completion Date: 5 October 1962
- d. Deliverable Items: 2 each Engineering Models  
Final Report

3. Date of Meeting: 9 August 1962

4. Place of Meeting: [REDACTED]

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5. Persons Attending:

Agency

Non-Agency

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6. Contractor's Performance:

- a. On Schedule and Expected to Remain So: Yes
- b. Within Obligated Funds and Expected to Remain So: Yes
- c. Satisfactory Technical Progress: Yes

SUBJECT: Trip Report - Development of H-5 Head Crack Generator

The H-5 is an off-shoot of the HEP-1 developed by [REDACTED] for THD and is essentially two H-3's back-to-back. Therefore, the mechanical and electrical characteristics of the H-5 are not new. However, the idea of paralleling a battery made up of sealed nickel cadmium cells across the H-5 has not yet been evaluated in practice and could prove to be a source of trouble.

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The battery pack selected to be used in the H-5 is made up of ten S-108 (Size F) cells manufactured by the [REDACTED]. These cells are rated at 5.6 AH at the five hour rate and 4.8 AH at the one hour rate. The manufacturer's recommended charging rate is 560 ma for 14 hours. If this charging rate is exceeded, the cells can be damaged. However, the cells can be charged at a higher rate (2.5 amperes in the case of the H-5) providing the cells are not overcharged. Since the terminal voltage of a nickel cadmium cell rises during a charging cycle, it is possible to avoid overcharge by monitoring the terminal voltage.

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A fully charged 10 cell battery will have a terminal voltage of about 15.5 to 16 volts. The H-5 will have circuitry that will monitor the terminal voltage of the battery and when it reaches 14 volts, a red lamp will come on. This will be an indication for an operator to stop cranking. Additionally, the H-5 will have a green light to indicate that the generator is delivering 2.5 amperes into the battery.

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Mr. [REDACTED] stated that the generators would be delivered in October providing all the necessary components are received on schedule.

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